

PATENT SPECIFICATION



Convention Date (United States): Apr. 8, 1920.

161,558

Application Date (in United Kingdom): Dec. 23, 1920. No. 36,036 / 20.

Complete Accepted. Aug. 4, 1921.

COMPLETE SPECIFICATION.

Improvements in Packing for Piston Rods.

I, MORRIS BROWN BREWSTER, of 454, Railway Exchange Building, Chicago, Illinois, United States of America, citizen of said United States, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention has reference to improvements in packing rings, more particularly adapted for use in the packing of the piston rods in steam locomotives in which superheated steam is used.

Packing rings consisting of compositions of antifriction metal and copper have comprised a ring of antifriction metal loosely fitted within a thin sectional sheet of copper or like metal.

In accordance with my invention I provide an improved packing ring in which the antifriction metal ring and the copper or like shell ring are united into one substantially integral structure, the said packing being composed of two parts or sections enabling the packing ring to be placed on or taken off the shaft by moving them at right angles to the axis of the shaft.

A feature of the invention consists in forming scarf joints between the ends of the sections whereby said ends overlap.

To this end I make a rudimentary packing ring preferably of lead and sheath it in a layer of copper except on the surface which is to contact with the piston rod; the lead having a melting point sufficiently high to withstand the temperatures to which it is subjected, and possessing also the desired antifriction qualities.

The copper sheathing, on the other hand confines and protects the lead so as to make the ring as a whole retain its

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shape, at least to a degree sufficient to enable it to carry out its functions as a packing ring. In other words, the copper stiffens the ring but leaves it sufficiently ductile as a whole to permit it to yield under the pressure to which it is subjected by the surrounding molding means and mold itself to the rod as wear takes place, thus maintaining a tight joint.

In the accompanying drawing:

Figure 1 is an axial section taken through a well known type of piston-rod packing, only those elements adjacent to the packing ring being shown;

Fig. 2 shows a plan view and side elevation of the packing ring itself.

Fig. 3 is a section on line 3—3 of Fig. 2, and

Fig. 4 is a section similar to Fig. 3, illustrating one method of manufacturing the ring.

Referring to the drawing, 1 represents a piston rod, 2 the packing ring as a whole, 3 the gland of the stuffing box, 4 the sliding plate between the packing ring and the stuffing box, 5 and 6 the retainer and shell respectively; these parts, except for the novel construction of the packing ring, being old and well known and being shown simply to illustrate one of the many forms of packing in which my improved ring may be employed. The contour of the ring has at one end or side an external surface in the form of a frustum of a cone whose axis is coincident with the axis of the ring.

In accordance with my invention, as illustrated in Fig. 3, I form the packing ring of a rudimentary ring 7, which may be made of any suitable anti-friction metal such as will ordinarily not possess the necessary mechanical strength to retain its shape in service; lead being an

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example of such material. The member 7 is sheathed with a suitable metal, such as copper, preferably in the form of a shell 8, which completely surrounds the ring while leaving its inner bearing face 9 exposed. The ring may be formed by first fashioning the sheathing or shell and then, after tinning the inside thereof, pouring the lead filling into the same. On the other hand, the rudimentary ring may be cast and the sheathing or shell be formed about the same afterwards.

In Fig. 4, I have illustrated a rudimentary ring, 10, which, after having been cast, is placed within a short cylinder of copper 11, having at one end an inwardly-turned flange 12. The other end of the cylindrical member 11 is then pressed inwardly from the position shown in dotted lines to that shown in full lines at 14, thus producing a completed ring similar to the ring shown in Fig. 3.

The shell or sheathing is made heavy enough to supply the ring with sufficient mechanical strength to hold in shape the softer anti-friction element which would not of itself be capable of withstanding the pressures to which the ring is subjected. It will be seen that a composite ring of this kind can be made easily and cheaply, that such a ring will be free from the imperfections apt to be found in any copper-lead ring, that it will be durable, and that when its useful life is over its value as scrap will be practically the intrinsic value of the metals of which it is composed.

After the ring is formed as hereinbefore described with reference to Figures 3 and 4, the latter is cut into sections by sawing through the same along planes making an acute angle with the plane of

the ring and thus forming two parts *a* and *b* each having diagonal overlapping end joints *c*.

To enable the packing ring to be placed on and off the shaft by moving the sections *a* and *b* at right-angles to the axis of the shaft, the inner corner of the diagonal joints *c* are cut away as at *d*, otherwise each section of ring with its scarf joint would have a circular length of more than 180° and could not be displaced laterally on the shaft.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. An improved packing ring comprising a soft metal core and a stiffer sheathing of ductile metal extending over the same and forming a substantially integral structure therewith and leaving the inner wearing surface of the core exposed, the composite ring being sectional.

2. A packing ring in accordance with Claim 1, wherein the ends of the sections of the composite ring are cut diagonally to form scarf joints, and the inner corners of the joints are cut away as at *d*.

3. A packing ring as in Claims 1 and 2, one end or side of said ring being in the form of a frustum of a cone having its axis coincident with the axis of the ring.

4. The improved packing ring substantially as herein set forth and as shown in the drawings.

Dated this 22nd day of December, 1920.

For the Applicant,
GEORGE BARKER & BRETTELL.

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[This Drawing is a full-size reproduction of the Original]

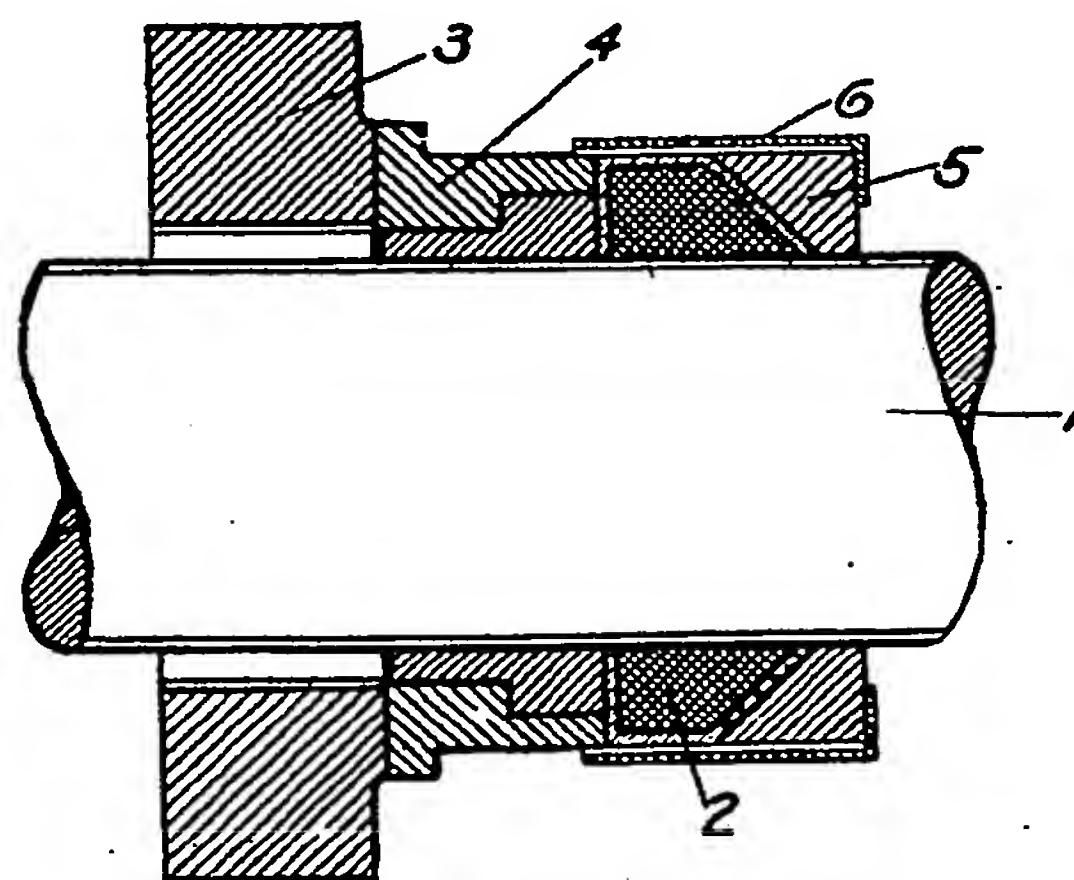


Fig. 1.

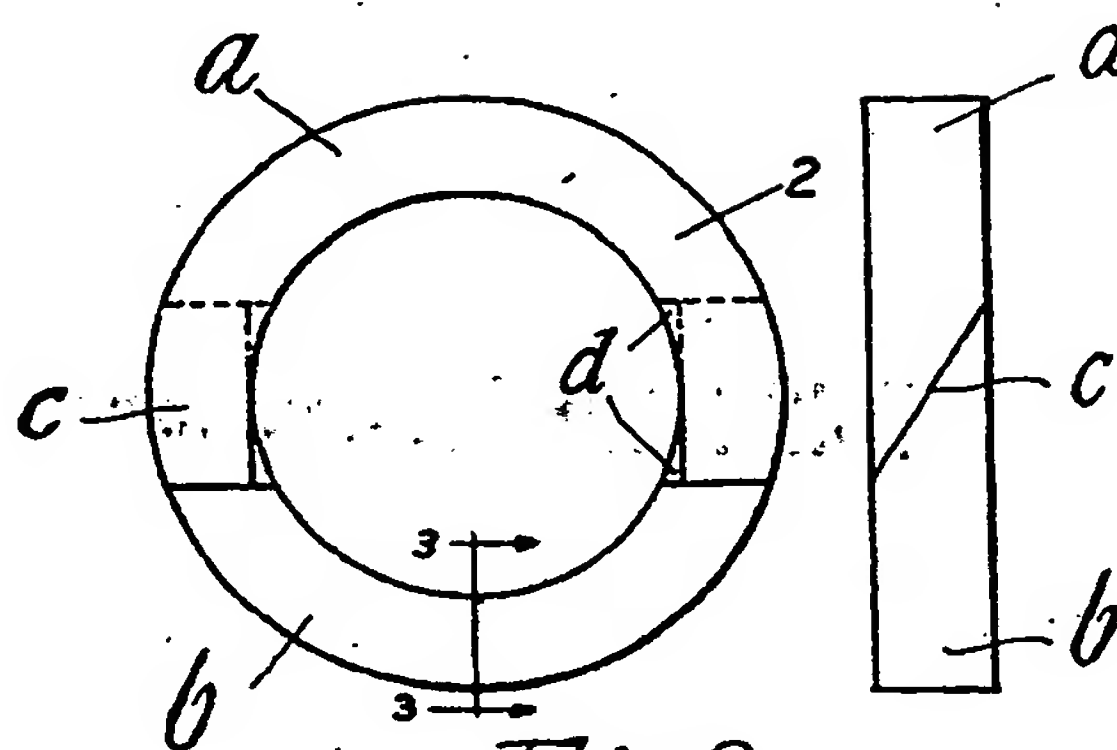


Fig. 2.

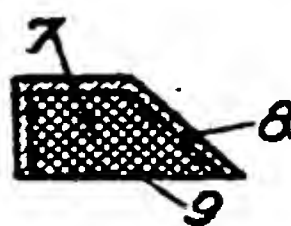


Fig. 3.

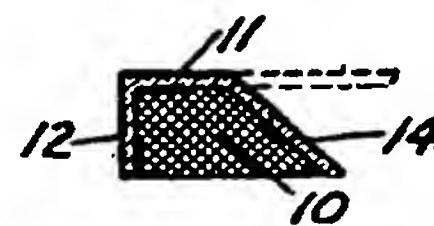


Fig. 4.

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